Engines That Drive Her Thirty-five Miles an Hour with 2,500 Revolutions a Minute and No Vibration-Brady to Build a Steamship to Cross the Atlantic in Three Bays.

Copyright by McClure's Magazine. There she is, low in the water, long and narrow in the body (100 feet by 9 feet), sharp as a knife at the bow. The massive smokestack amidships, short and thick, gives her a kind of military dignity. A skill takes us aboard and I notice a stoker giving the smokestack a

fresh coat of vellow.
"We do that," says Mr. Barnard, "after every run, because the fire licks the paint off when we drive her with the forced draught. If you go out to morrow you will see the flame wind round that smokestack like a scarf round your neck." In a forward shelter, like a pilot house, is a two-foot wooden wheel, and before it a semicircle of little windows for the steersman to

look through. On top of the shelter is a plat-form with guards around it. "The lookout stands up there and passes the

word to another man, who passes it to the man at the wheel." What, two men to pass the word a few

Yes, it takes two. When she's doing her

best you can't hear anything six inches from your car except a steady roar." "But what word is there to pass? Can't you

keep your own lookout through the windows? The officer smiles. Why, sometimes, sir, when we're making a

run in rough weather, it seems as if the whole German Ocean was coming over us. We shot by a man-of-war on a day like that, and the officers said afterward that all they could see of us was our bow and the tip of our smokestack. In the trial to-morrow you will understand why we need a lookout." At one side of the wheel is an ordinary ma-

cine telegraph, with the signals "Full speed,"
"Stop," "Reverse," &c., on its dial plate.

"The steersman signals with these to the enmineer-that is, Mr. Parsons himself-who stands back there in the other shelter, watching the gauges and regulating the speed. He controls the whole craft from the deck-boiler pressure, forced draught, go-ahead turbines, reversing turbine, everything. There never was an easier boat to run than this one. Ten men are her full crew-deck hands, engine-room hands, stokers, everybody."

And yet she's the fastest vessel afloat !" "I haven't heard of anything that can beat her. The record speed for vessels of her size has been twenty-four knots an hour-made by sec-



SHE RUNS AS SMOOTHLY AS A BICYCLE ON ASPHALT, AND THE DECK IS LIKE A BILLIARD TABLE . . AND PRESENTLY WE PUT

and-class tornede boats; she will do that with open stokeholes; and, under forced draught, she will steam thirty-five knots an hour and keep it

up until her coal gives out." 'How soon would that be I" "In about three hours; that is, she can run a hundred knots at full speed. You see her bunkers only carry seven tons, and her displace-

ment is only forty-four and one-half tons." "And she's the most powerful vessel affeat, isn't she, for her size ?"

"Undoubtedly. She has 2,100 horse power, which is four times as much as any vessel of her size ever had before. She has a steam-producing capacity of 30,000 pounds an hour and she carries a pressure on her boller of 225 pounds to the square inch. We'll go below, if

We squeeze ourselves down little ladders into We squeeze ourselves down little ladders into the lower regions of this iron doll's house of a ship. Here the stokers ply their shovels and swing the furnace doors in iron-walled chambers hermetically sealed, where the air is compressed by a fan for the forced draught. Here is the water-tube boiler. Here is the engine room, with great pipes curving about that seem entirely too large for so small a boat; they carry steam to the turbines and to the condenser. And now comes an explanation of these same turbines, in the working of which for driving the Turbinia and reversing her lies the beginning and the end of the whole Parsons achievement. The Turbinia is propolled by an engine different from any that was ever before put in a boat. It has no flywheel, no cylinders, no backand-forth movement of rods and pistons, no in-

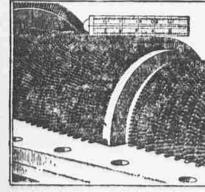
and-forth movement of rods and pistons, no in tricate valves; it is a hundred times simple: than the ordinary steam engine, and as easy to understand as a windmill. Indeed, it is quite like a windmill in this, that the steam, being driven against the fans of specially made wheels on the three propelier shafts, makes these turn

on the three propelier shafts, makes these turn very rapidly, and, of course, the screws turn with the shafts.

"The plain result of it all is," says Mr. Barnard, "that we have a metor here capable of turning faster and faster, with practically no limit so long as we increase the steam pressure. The screws of the Turbinia make about 2,500 revolutions a minute, without any vibration, whereas the best marine engine in the world, with reciprocating motion, would toar itself to pieces doing one-fourth as many. We could run our turbo-motors up to 5,000 or 10,000 revolutions a minute, if there would be no vibrations, since the force of the steam is exerted always in the same direction, around and around, not back and forth."

"Then you can get up speed very quickly it"

"Then you can get up speed very quickly?"
"Yes, that is one of the Turbinia's strong



SECTION OF THE SHAFT OF A TURBINE MOTOR BROWING COLLARS AND THE HUNDREDS OF LITTLE BLADES AGAINST WHICH THE STRAM

IS DRIVEN AS IT PASSES FROM RIGHT TO LEFT.

points. We can practically increase the steam pressure as fast as we please, since there are no dead centres of cranks to be considered, nor danger from water hammer in the cylinders. Off the Tyne last summer we ran the screws up to a twenty-eight-knot rate from a standatill in twenty seconds, and we could certainly bring them to full speed from a standatill in thirty seconds. That does not mean that the vessel would be making full speed in thirty seconds, for it would take some time to overcome her inertia, but the screws would be turning at that rate.

"How long would it take an ordinary marine engine to work up to full speed from a stand-atill f"

engine to work up to full speed from a stand-still "
"I should say at least fifteen minutes."
"And you can reverse her quickly?"
"We can reverse her instantly, as far as the engines are concerned; it would be merely a question of benains the propeller blades. You are sure to see some reversing to morrow in the trials, for there will be Freindt engineers on board who are particularly interested in that very point. Mr. Parsonshas put in a special reversing turbine which may be connected with the central propeller shaft, so that all he has do now, when he gets the signal Heverse, is to shut off steam from the goahead turbines and turn it into the reversing one."

turn it into the reversing one.

'And how fast will she run backward f'
"Ten knots an bour. You see, at present,
there is only one shalt working when she goes
that way, but reversing turbines could easily
be fitted to all the shafts without much increase in weight."

be fitted to all the shafts without much increase in weight.

"Do I understand correctly that the Turbinia has three propeler shafts?

"Yes, and each one carries three screws, one behind the other, so that she is driven by nine screws in all."

"What is the advantage in having so many f"

"We get a better purchase on the water. In his first experiments Mr. Parsons tried only one screw on a single shaft, making that one large enough for the desired effort; but he found that the water was simply chursed into foam with the rapid revolutions, and nothing was left for the third to act upon. Then he substituted three shafts with a smaller acrew on each, but semeting of the old trouble remained; so he

finally put three screws on each of the three shafts, placing the screws at intervals of several feet. Since then all has gone well, although he is still experimenting with different models." "How large are the screws used now?" "How large are the screws used now?" "There is bustle on the deck of the Turbinia, her yellow smokestack sends up black parfs, her gauges show full pressure in the boiler, her stokers stand with nervous shovels, she is ready for her trial. Mr. Parsons is at his post; Mr. Barnard, the steersman, is in his shelter; Mr. Barnard, the steersman, is in his shelter; Mr. Leyland, the lookout, is on the bridge. They wear high boots, snug caps, and rough sea ciothes, in contrast to the cliffed garments of some gentleewer forward, men who have come from a distance to see the little racer show her heris. Among the latter are experts in marine engineering from the famous Le Creusot works.

"We are going to start, gentlemen," says my friend, the officer. "You had better put these on," and he points to a pile of cliskins and overalis. "you will need them soon."

Off go top hats and overcosts with velvet collars, and presently we are sallors with the best of them. Meanwhile the Turbinia is steaming down the Tyne toward the occan.

"The law requires us to go slow," says the officer, "until we reach the sea. We're under natural draught now.

She runs as smoothly as a hicycle on asphalt, and the deck is like a billiard table. No need yet for the overalis. Presently we put out into the open, leaving behind the lighthouse and the loclock gun at North Fields, fired daily from Greenwich.

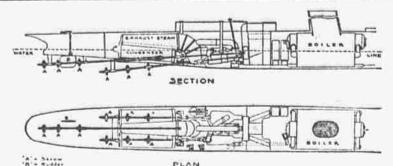
"Now we can let her go a little," says the officer, and shuts down the iron dors that each the side, suggests a great iron cabues, the shaft coming out of its mouth like a massive ramred. On the inner surface of this long, criindrical box are fixed hundreds of stationary blades corresponding to the moving blades on the shaft, and these are curved in opposite ways, so as to form channels for the steam and direct it against the moving blades at the most effective angles.

form channels for the steam and direct it against the moving blades at the most effective angles.

Such is the arrangement of the ordinary turbine motor, and it is hard to imagine how an engine could be simpler; the steam blows upon the shaft, and the shaft turns; that is all.

In driving the Turbinia, however, this modification is introduced, that the steam goes through its three stages of expansion in three separate steam cheets instead of in a single one; that is, in three separate turbines arranged side by side bonesath the floor of the engine room. These three turbines, like the collars just referred to, are of different diameters, and each one has a surface composed of hundreds of little blades as already described. The smallest turbine receives the steam first, as it comes from the boiler, and discharges it into the intermediate turbine, the larger diameter of which offers greater leverage, as seen before, to the lessened steam pressure, so that shaft No. 2 is turned with the same energy as shaft No. 1. And so it is with the third and largest turbine, which receives the steam last, when it has expanded to its lowest pressure. This turbine No. 2 is driven with the same energy as the other two, because the steam acts upon a collar of much larger diameter, with blades extended so that what is lost in pressure is made up in increased leverage. And it results from this nice proportioning of lessening steam pressure and increasing blade leverage that the three shafts of the Turbinia are driven with the same energy, although the steam which drives them works at a constantly decreasing pressure.

And there also results from this triple turbine works at a constantly decreasing pressure.



Section and plan of the Turbinia, showing the arrangement of the turbines, boilers shafts, screws, &c.

We are running into big slapping waves, and the spray breaks over us. I go back to Mr. Parsons's shelter, where things are dryer.

"Twenty-four knots," he says, and then leans forward suddenly to the window. We are passing a salling vessel on our starboard beam.

"Twenty-eight knots," says Mr. Parsons.

"How can you tell?" I ask.

"By the gauges.

Greenwich.

"Now we can let her go a little," says the officer, and shuts down the fron doors that seal the
stoke holes. Forthwith the fan for the forced
draught begins to hum, and the condenser pump
sets up a quicker beat. We are going faster
every second.

"Twenty-eight knots," says Mr. Parsons.

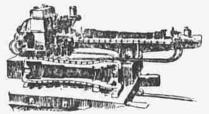
"How can you tell?" lask.
"By the gauges."

I burry to the stern and ask my photographer to take the picture of an extraordinary wave that is forming higher and higher in our wake, a greenish-blue tumbling mass, a solid mound of water with creat as high as the dock, tons of water swollen into a head that races after us like some angry monster. It becomes more noticeable now with every increase in speed.

I turn and see a long, thick tongue of flame darting toward us from the smokestack. It curves and shoots into fantastic shapes as the wind catches it, and sometimes it licks the iron sides, and the paint cracks and peels.
"Thirty-one and a half," shouts some one passing near us. The forced draught has been sweep the deck aimost continuously; yet the boat is quite steady underneath us.

Thirty-five knots an hour we are making now—Mr. Parsons has waved the news—that is forty miles an hour! But there is a poignancy of sensation in this that could never be felt on a locomotive, not even if you rode at the very you and beside you and over you at locomotive pace, flatting you on every side, spitting at you from the front, foaming after you from behind. And there is the roar and blast of wind and fire, and the drowning of everything in noise.

I go forward again and look down the knife-edge of the bow; it cuts the ocean clean, with scarcely a ripple; the buffeting of waves comes from the shoulders of the boat and because we are so near the water (only three feet or so above it), and because we ride over nothing, but cut through everything though it be a wall of water ten feet high. And still the Turbinia is steady; only a slight lifting fore and aft, and no rolling at all; in the shelter I can write quite easily.

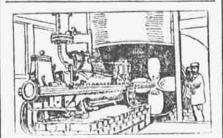


TURBINE MOTOR WITH THE TOP OF THE CHEST LIFTED OFF, SHOWING THE THREE-COLLARED SHAFT WITH ITS BLADES, AND THE COLRE-SPONDING COLLARS AND BLADES IN THE CHEST. HERE THE MOTOR IS DRIVING AN OR-DINARY DYNAMO, WHICH IS SHOWN AT-TACHED TO IT ON THE LEFT.

I walk aft again, clutching the rope for safety and bending from the spray. I never saw the ground rush by, not even on the Empire State express, as the water scens now to be rushing by. The smokestack is toosing up chunks of coal in dancing thousands, like some giant corn popper; Mr. Parsons's shelter, through the glimmering heat, becomes the head of a queer lavender creature, with big round eyes and a spiendid cylindrical nose belted fast between them. Are we resuly travelling forty miles an hour over the sea; or is this some mad snowplough driving us forty miles an hour through blinning drifts, or are we shooting the Whirlpool Rapids at forty miles an hour on a blazing raft! plazing raft !

blazing raft? Once more I stand at the heart of the ship where Mr. Parsons is; this is the focus for all the sound aboard, the growl of the blast, the beat of the pump, the hum of the fan, all blended into one steady note, the song of the Turbinia. Mr. Parsons's back is turued, his eyes are on the gauges. This is his boat, his invention. What must his feelings he to think, if he has time to think, that since the ocean was back on man has wrought upon it such a won-

system an economy of energy such as has never been possible in any other engine, the steam being used continuously from the moment it enters the first turbine, at a boiler pressure of 225 pounds, until it leaves the third turbine, to conter the condensar at an absolute pressure of enter the condenser, at an absolute pressure of one pound or less. As against this is the case of the most efficient marine and stationary engines, which condense their steam at an absolute the condense their steam at an absolute the condense their steam.



TURBING MOTOR. ONLY THE EXTERIOR OF THE STEAM CHEST IS SHOWN HERE, REVOLVING INSIDE THE CHEST IS THE THREE-COLLARED SHAFT, WITH ITS MANY BLADES. THE MOTOR IS DRIVING A VENTILATING FAN, WHICH ALSO APPEARS IN THE PICTURE.

lute pressure not under seven pounds, and lute pressure not under seven pounds, and thereby waste the energy of the steam from the seven-pound point down to the ene-pound point. This iess for them and saving for the turbines is a matter of enormous consequence in the practical daily running of motors and machines. It means, for instance, increased speed when applied to marine propulsion, and greater economy in coal wherever applied.

So much I learned atter talking with Mr. Parsons for an hour or so. And there was much more to learn.

more to learn,
"We shall give vessels," he continued more to learn.

"We shall give vessels," he continued,
"many things besides greater speed. We shall
give them greater statility and greater safety
in time of war by butting the vital parts far below the water line. We shall give them greater
carrying capacity by reducing the weight of
machinery and the space occupied by it, the
ratio in these respects between turbine engines
and reciprocating engines being about one to
four. We shall save them money for machinery
and expense of maintenance, since our motors
cost far less than ordinary ones of the same
efficiency. We shall also give them absence of
vibration. You saw yourself how steadily our
little boat ran yesterday. It would be the same
for an ocean liner; it is the same in various
plants where turbo-motors have been substituted for the old-style ones."
Then, as we wasked about the shops, Mr. Parsons pointed out various applications of the
turbine engine that have been already made.
Thus they manufacture portable dynamos for
ehips going through the Succ Canal at night, to
produce the electric light at the bows, without
which no vessel may pass. Ships beving no
electric plant of their own merely holst over the
side a turbo-generator rested for the occasion,
connect a s'eam pipe with it from their bollers,
and the thing is done.

"Can you substitute the turbine engine," I

and the thing is done.
"Can you substitute the turbine engine," I asked, "for the ordinary stationary engine in factories!"
"That simply depends on one thing which is "That simply depends on one thing which is now being determined, the possibility of gearing down the high speed shatt of the turbine to such lower speeds as would be required. For each lower speeds as would be required. For each months we have had a turbogenerator in our electric lighting works at Newcastle geared down from 9,600 to 4,900 revolutions a minute, and it has given excellent satisfaction. That is encouraging, and if we continue to get good results in gearing we shall be able to compete with the reciprocating engine in all its industrial applications with the same advantages on our side that I have pointed out. Think of being able to put a stationary engine upon any ordinary floor without attachments or founda-



creases as the square of the speed; that is, if you double your speed you quadrupts your cost burned, and so on. Also, the horse bower in creases as the cube of the speed, so that if —

Mr. Parsons went on with this sort of thing for some time longer, and stemed to regard it as perfectly simple. I waited for the conclusion, which was:

"I believe that a liner of 15,000 tons can be built with engines like the Turbinia's, capable of running between Sandy Hook and Rockes Foint in three days. She will have weight and space in boiler and engine room which will enable her to carry about the same number of passengers and the same cargo as a 15,000-ton stammer carries to-day."

"And she would have no vibrations from the machinery i"

"None whatever, no more than the Turbinia has Intend I care any with sweet statement carries to-day."

"None whatever, no more than the Turbinia has Intend I care any with sweet statement as bicycle ride to a given point and back in which certain persons have agreed to participate, starting and returning at a specific to the state of the state of

"And she would have no vibrations from the machinery?"

"None whatever, no more than the Turbinia has. Indeed, I may say this confidently, that the turbine principle in marine propulsion is seen to greater and greater advantage as the vessels increase in size."

It occurred to me here to ask Mr. Parsons about a matter of much concern to New Yorkers.

"What could you do in running passenger boats between New York and Staten I sland!"

"How far is it I'

"About ten miles; our fastest boats now take half an hour to go acrosa."

"We could put on a fleet of passenger boats, that is, a company could, of small tonnage, say 200 or 300 tons, that would run at a forty-knot or fifty-knot pace and cover the distance in twelve or fifteen minutes. They would be built with closed-in decks like railroad cars to protect passengers from the wind, and there would be enough of them so that each one could lay off to coal every five or six trips. If you despatched such boats every six or seven minutes you could carry a good many thousand people every day."

What such a change as this would mean to residents of New York and landowers on Staten Island will be understood at once when it is remembered that here are two islands, parts of the same metropolis, the one long and narrow and crowded almost beyond human endurance, the other big and round and almost uninhabited save for a fringe of people on one side. Hitherto half an hour of water travel has separated the latter from the business heart of the former. Suppose this was reduced to twelve minutes!

WHAT SOCIETY IS DOING.

The glorious Fourth will be duly celebrated to-morrow at the country clubs. It will furnish the basis for all the social festivities in immediate view, There were dances at the Ardeloy Casino, the Westchester Country Club, and at Tuxedo last night. There will be others to-morrow night on a more comprehensive scale, and pyrotechnic displays will be in order. This will close the early summer season at Tuxedo. Every room at the ciubhouse is filled, as all have been since June 1. The cot-tages, as a role, have house parties. On Tues-day morning the exodus will begin.

Center Hitchcock is responsible for the existence of the tremendously popular Clambake Club. It will celebrate the Fourth at Newbort with the first bake of the season. The club has a three years' lease of the Robbins estate on Easton's Point, which will be the rendezvous. Prince Victor Emmanuel, it is expected, will be the guest of honor at the second clambake of the season. Among the members of the club are Oliver H. P. Belmont, Hermann Oelrichs, Prescott Lawrence, Henry F. Eldridge, Frank M. Ware, Max Arassiz, James Hude Beckman, August Belmont, William Cutting, Jr., N. J. Du Blois, Hollis Hunnewell, L. Q. Jones, Roland King, David H. King, Jr., F. T. Moorlicad, Edwin D. Morgan, H. K. Norman, Charles M. Oelrichs, Harper Pennington, S. Howland Robbins, Lisbenard Stewart, Perry Tiliany, and J. S. Tooker. William K. Vanderbilt, who belongs to the club, will not be onliand to-morrow, as he salled with his nephew, Alfred G. Vanderbilt, on the Lucania yesteriay. Prince Victor Emmanuel, it is expected, will be One of the most notable of the festivities which

will mark the Fourth at Newport will be the party given by Mr. and Mrs. Elbridge T. Gerry on their steam yacht Electra. There will also be quite a number of dinner parties.

Whether or not Mrs. Calvin S. Brice will do much entertaining at "Beaulieu," her Newport establishment, this summer is not yet known. Heretofore Mrs. Brice has given on an average a dozen functions to one of any other cottager.
Miss Kate Brice has been in charge at "Beauleu" for some time. Mrs. Brice has been out
West lecturing for the cause in which she is interested. Calvin 8. Brice, for the sake of rest
and change, is travelling on the other side.
With him is Miss Helen Brica. Kirk Brice,
the younger son, has been travelling around the
world and has now started for the Philippines.
He intends to join the army and his expectation
is to be placed on Gen. Merritt's staff. Stewart
M. Brice, at last accounts, was attending to the
landing and dispensing of supplies for the army
before Santiago. a dozen functions to one of any other cottager.

Mr. and Mrs. Philip Rhinelander and the former's parents, Mr. and Mrs. William Rhine-lander, have been sojourning of late at the Ori-ental, Manhattan Beach. Mr. and Mrs. Philip Ithinolander will go soon to Saratoga, where they have taken a cottage for the summer.

Miss Charlotte Whiting will make her social

Dosoris Pond Company in the suit recently tried in the Supreme Court in Brooklyn to enjoin the fisherman at Oyster Hay, L. I. from dredging for cysters in the waters controlled by the company.

participate, starting and returning at a specified time. Trips of this kind are being made every day by thousands of riders in parties of from two to ten, but the club run, scheduled a month ahead, posted on the bulletin board, and advertised by postal cards to members, is, according to all testimony, losing its grip. A few years ago clubs having 150 members could count on having from 40 to 100 riders out every Sunday in the stated club run, but now, when the membership of most of the clubs is larger, it is hard to got out a score of starters. This is one of the phases that marks the transformation through which bicycling is passing. Clubmen who take enthusiastic interest in their respective organizations have been noting the decadence of the club run for a couple of scasons. They are at a loss to account for it, and equally at sea in regard to finding a remedy. There are only a few clubs that can to-day take out more than a dozen members on the trip regularly scheduled by the Road Committee, notwithstanding that 75 per cont. of the members go out on their wheels every Sunday. Why do they not all join in the regular run of the club and help the organization to make a showing on the road? That is a ques-tion which is bothering many captains and committee chairmen. The problem would be of little consequence to those outside of clubs were it not for the fact that its very existence tells of a transitional stage in which every cyclist must have interest. The bicycle club run does not cut as much figure on the road as formorly. One hundred or 200 members of an organization riding out together, all uniformed, was at one time a performance that made a club respected. It denoted strength, harmony and cooperation, and spectators paid tribute. It is different now. Too many clubs became strong in membership and able to take out a "big push."

mon a pastime for organizations to figure as prominently on the read as in bygone days. The glory of the club run has departed. Another fact that figures in the cause of this condition is that the bicycle club has not so much of the special character that it possessed in the time when riders were only a small class of the population and were forced by environment to form cliques and organize. The average wheeling club is taking on more and more the character of the purely social club. The members do not feel to be so emphatically bound to a mutual interest. The cause for which they originally enlisted-the bicycle-has become an everyday affair, and the social features of the

enlisted—the bicycle—has become an every-day affair, and the social features of the club appeal more strongly than its special ones. In days of yore every member was well acquainted with all the others, but now in the clubs it is apt to be the case that the average member knows only a few of his fellows and is totally strange to the majority. When the notice of a club run appears on the bulletin board it excites no interest except among the particular set that usually go on the official runs. The other active riders in the organization form themselves into coteries for private runs of their own. A wheelman whose name is on the rolls of one of the largest cycling organizations in the city says:

"We seldom get more than two dozen riders out on a scheduled run. I never go. When I see the affair posted I don't know who is going to be in the party, whether it will be composed of men congruial to me or not. I drop around at the clubhouse and meet a few of the fellows whom I know and like, and when some one proposes to ride to some place I go along, sure of having company of my own choosing. That is just what you do not get in a formal run of the club. You have to go with whoever happens along. There is seldom a Sunday without several private runs of the kind described from our club, and often the number of participants in each exceeds that in the regular run. I stick to the club for the same reason I would to a social club. I want to keep in touch with certain friends, and the clubhouse is a good place to store my wheel. I have suggested that for every run the men enter several weeks ahead, writing their names on a slip of paper and keeping them posted on the bulletin board the same as is done for a dinner party. Then every one could know ahead of time who was going on each run and make up his mind whether he wanted to be in the crowd or not. This might help the club increase the atlendance at the runs, but I doubt if it would stop the process of decay that is unquestionably in progress because of general circumstan

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The Newby Oval, which is the name of the track on which the coampionship races of the national meet will be run off at Indianapolic next month, was finished last week. It is a four lap board affair of white pine, laid with the rough side up. It is built on the whaleback plan. An innovation in its construction was the dipping of each piece of timber in a preservative compound before living it next to its seighbor. The actuation meet is calculated to

protect the track from the ravages of the weather, and also to protect the eyes of riders and spectators, because the treatment stains the wood to a dead brown color. The track lies east and west, and the grand stand is on the south side, fronting north. Two thousand persons can be seated in the latter. Twenty boxes, containing ten chairs sech, are ranged in front of the stand, and below them are 200 press seats laid out in three tiers. The idea employed at Berkeley Oval of constructing a tunnel under the track for the use of riders and trainers has been adopted, and this tunnel will be the only means of leaving and entoring the infield. Two shelicred stands have been built on each side of the min one, which bring the total seating capacity up to 5,000. Seventy are lamps have been placed about the grounds, to be used in illuminating the track and stands when the night races are run. A wheel room has been built under the grand stand and bleyels racks placed on the outside. A special cycle path has been built, connecting the park, which is a few blocks north of Fell Creek and just off Central avenue, with Thirtieth street. From these details it can be deduced that the Hoosicra having charge of the national meet affairs have spared no pains in the work of preparation.

can be deduced that the Hoosers having charge of the national meet affairs have spared no pains in the work of preparation.

Several wheelmen who go out on public roads clad in tights and sweaters went along the cycle path bound for Coney Island the other day, and two riders who have had the acasoning of several years became inspired to open a novel discussion concerning what is the limit of dress for cyclists from the standpoints of propriety, justice and law. As they sat and argued the passing throng furnished exhibits of all kinds for the evidence. It happened to be the proper day, or the best hour, or perhaps the debating couple chanced upon a favorable observation spot for seeing all the freak varieties of dress that are affected on the wheel. A burly colored man passed, wearing black tights without trunks and a sweater striped with crimson and blue. A woman dressed in tights and short skirts went by, and not more than a mile behind followed a boy in a racing suit, with his arms bare and his legs naked from the knee to the top of his shoes, and wrinkled stockings. After these sights the question arose concerning how little clothing a rider might wear without being legally arrested. Both men agreed that it would be interesting to have some cyclist try it, but neither cared to be the demonstrator. The point of difference between them came when one made the proposition that a woman had as much legal right to oppoar in scant costume as a man, and should be as immune from arrest. There is hardly a day when men do not go slong the Coney Island paths dressed in a fashion that would cause their arrest on Broadway; and the same latrue of women. A woman cannot wear a man's costume on the street, but on a wheel without having on anything more than a breecheloth, and he thought be had as much right to do it as the ladians of the Wild West show, who ride their horses through the city streets in parades drossed in that fashion. The unity point of value brought out by the talk was that there is no limit of disorderly con

"any man or woman may be arrested by a policeman at his discretion on the charge of 'disorderly conduct' or something similar. The discretion of the officer is not infallible. This has been shown by the fact that almost every day there are costumes abroad more offensively thin and short than those that have caused the arrest of others. It was not long ago that a woman went along the cycle path dressed in Parisian style that showed a small stretch of bare leg above the top of the hose, after the Highland fashion. She was haited by an officer and ordered to go home, but costumes exactly the same can be occasionally seen worn by others who never are molested. With policemen it seems to depend largely upon the conduct of ridesy and the attention they attract whether or not they are amenable to arrest. It would be more equitable if some explicit ordinance was drawn that declared how bicycle riders might and onlight not dress with respect to tights and personal exposure; and possibly if there was a line drawn and both sexes compelled to keep it, there would be fewer persons objecting to bicycling because of the license of the road." An accident recently happened to a Plainfield

An accident recently happened to a Plainfield rider that has an instructive value. He bought a new lamp that was decidedly heavy and had on it one of the style of clamps supposed to be adjustable to either the head or the fork side. The rider had a racing wheel and affired the lamp to one of the front fork sides, but the clamp was too big for the light, structural character of the machine. In consequence the lamp caught in the spokes, was wrenched from its position and carried around until it wedged against the forks. The result was an ugly spill, from the effects of which the rider was confined to his bed for several days. The brackets that are built up with lamps are made for the aver-

An English daily paper publishes an article on the subject of punctures, and explains that when trying to locate an injury of this kind and there is no water handy in which to lave the tire in order to detect air bubbles, a powerful magnifying glass can be used. All those who take the hint seriously will undoubtedly provide themselves with strong magnifying glasses and carry them on overy ride in case they arrive with a puncture at a place where they cannot get water. It was a Long Island rider who discovered the item referred to, and he cut it out to show his friends. His only comment was, "I use spit."

ing with two friends recently that one kept his lamp on the bead of the wheel and that the tother fastened his to the fork side. As he had always used his own hamp on a bracket attached to the forward axie, he asked them to give reasons for their preference, after first admitting that he rode with his own on the axie because the bracket was there whon he got the cycle and he knew of no reason for changing. The man who used his lamp on the head said that he did so because he could reach over the handle bars and easily turn it up or down. This was a strong point, because, as every rider knews, it is selden nossible to light a kamp in just such a way that it will burn at the proper leight without subsequent regulating. This speaker argued also that the lamp sustained less jarring when on the head, and was therefore note olikely togo out. The man who prefers his lamp on the fork side yave the best reasons of all, and about converted his companions. He maintained that the light thrown from a lamp on the fork side yave the best reasons of all, and about converted his companions. He maintained that the light thrown from a lamp on the crank axle was obstructed by the rim, tree and spokes of the front wheel, and therefore gave poor service. An ordinarily goot lamp, he claimed, would light a city street from curb to curb if placed on the fork at a proper asigle, but such an angle could not be given to a lamp on the head of the wheel wastes its light in space. It shows not turn with the wheel and show where you are. A lamp on the front axle to the root with the wheel and show where you are. A lamp on the front axle to the root of the strong his placed on the such as along in front. It is good for nothing but a beacon to Indicate to the root axle is so close to the ground that it throws firsh that the less than half way up."

In a bulletin issued yesterday Chairman Mott of the LA W. Head and half way up."

INFORMATION FOR WHATLIMEN.

II. R. Religher, "From Providence, then through the Berkanire Hills, to Hudson, N.Y. have Providence and ride to Par cincert, Lebouron, Hebrowstie, Ledge ville, Last Uthchire, Mancheld, Hast Forthoro, Maesapoog Point Cobbs Tarsern, South Canton, Pempapoog Virlays, to Blue Hill, Mattaplad, to Roston; Lewe Beston and ride to Sewton Graings, Malham, Stower, North Last asser, Leoninster, Frichborg, South Garlier, Hoscha Village, West Orsings, Turner's Falls, Decident, Stellager, Charlemont, Florida, North Allane, South Adams, Chemire, Philadell, Lenger, in Stillage, Gravity, Malham, Stower, Malham, Stower, South Granger, Turner's Falls, Decided, South Adams, South Adams, Chemire, Friesdell, Lenger, in Stillage, Gravity, Charles, Chemire, Friesdell, Lenger, in Childen, Craryville, Marindade, Hollowsville, Claversch, to Hillston, William Uthird—From Pangisks pale to Fracing Valley, Cohe, Iake soil thinging out of Poughkreps let of Pleasant Valley, and the to Westlocton Hollow, Billorook, Malbotsville, Lingow, America Hollow, Billorook, Malbotsville, Lingow, America Hollow, Billorook, Malbotsville, Lingow, Chemina to Obharon Valley.

E. A. B.—From New York to Stranton and return to Philadelphia follow the route to Delaware Water Gap punished in Tan Seys of July 21 continue to Stroudsburg to Seranton from the paint follow route from Seranton from the paint follow route from Seranton from the Sorwalas, Nouth Norwalk, West Haven, Loudence, Lingow, 22, 1988.

Tourist—From Newark to the Delaware Water Gran Ride to Children systems and a direct to Bryley.

Brooklyn Advertisements.



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NOTES. The Harlem Wheelmen have decided to hold no official runs during July and August.
Houhours, the French rider, has won more middle distance matches than any of the foreign cracks riding in Europe this season.
Cordang, the Dutch rider, who holds the twenty-four-hour record, calms that 650 miles will be rider. rour-nour record, claims that 650 miles will be risdes in that time this season. On June 9 Robert Reynolds won the ten-mile cham-pionship of Ireland in 27 minutes 42 1-5 seconds.

ANIMALS PERISH IN A FIRE.

Birds, Chickens, Pigeons, a Dog and a Horse Cremuted in a Williamsburg Blaze. More than 100 canary birds, chickens and day in a fire which destroyed a stable and a two-story frame dwelling belonging to Gustav Adler at 79 Devne street Williamshure. The Adier at 79 Devoe street, Williamsburg, Toe canaries and the dog were kept in Adier's house and the pigeous and chickens in the stable, where for nearly a month Adier's horse had been under the care of a veterinary surgoon.

Thomas Clough of 77 Devoe street discovered

Terrible Speedily Cured By **CUTICURA**

My baby was about four weeks old when he began to suffer from that terribio discase, Eczema. I tried every remedy I thoughs would do him good. I even caded in the doctor who told me it would wear away in time, but I used his medicine to no account. I did not know what to do with him. He cried all the time and his face was equal to a raw piece of meat, it was horrible, and looked as if there was never any skin on it. I had to carry him around on a pillow. I was fairly discouraged. I was then recommended to use CUTICURA REMEDIES. The first time I used them I could see the change. I used about bolf a box of Currouna (clutment), and not one half cake of Curicum Soar, and at the end of one short week my boby was entirely cured. There has never been a trace of it since, to day his skin is as smooth and soft as a piece of silk. Miss. J. C. FRIEEE, Feb. 21, '98. 360 So. 1st St., Brooklyn, E. D.

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